WHAT IS CLAIMED IS:

1. A composition capable of binding to a biologically active microorganism comprising:

a nanoparticle, said nanoparticle comprising

a hydrophobic polymeric core,

a hydrophilic linking agent bound to said polymeric core, and

a biofunctional material bound to said linking agent, wherein said biofunctional material comprises a binding site for adhesins present on the surface of the biologically active microorganism.

2. The composition of claim 1, wherein the hydrophobic polymeric core comprises styrene monomer.

3. The composition of claim 1, wherein the hydrophobic polymeric core comprises methyl methacrylate monomer.

4. The composition of claim 1, wherein the hydrophobic polymeric core is a crosslinked polystyrene polymeric core.

5. The composition of claim 1, wherein the nanoparticle is between about 30 nm and about 5μm in average diameter.

6. The composition of claim 1, wherein the nanoparticle is between about 50nm and about 1μm in average diameter.

7. The composition of claim 1, wherein the linking agent comprises a hydrophilic polymer selected from the group consisting of a polypeptide and a polyethylene glycol.

8. The composition of claim 1, wherein the linking agent is a derivatized polyethylene glycol.

9. The composition of claim 1, wherein the linking agent has a degree of polymerization between about 10 and about 200.

10. The composition of claim 1, wherein the linking agent has a degree of polymerization between about 20 and about 100.

11. The composition of claim 1, wherein the biofunctional material is selected from the group consisting of glycolipids, glycoproteins, peptides, polypeptides, lipids, monosaccharides, polysaccharides, and derivatives thereof.

12. The composition of claim 1, wherein the biofunctional material is a

carbohydrate moiety.

13. The composition of claim 1, wherein the nanoparticle comprises more than one different biofunctional material.

14. The composition of claim 1, wherein the composition is an aqueous suspension.

15. The composition of claim 1, wherein the biologically active microorganism is a pathogenic bacterial organism.

16. The composition of claim 1, in which the biologically active microorganism is an enteropathogen.

17. The composition of claim 16, wherein the enteropathogen is *C. jejuni*.

18. The composition of claim 1, wherein the biologically active microorganism is selected from the group consisting of a bacterial pathogen, a viral pathogen, and a parasitic pathogen.

19. The composition of claim 1, wherein the biofunctional material is an antigentic epitope.

20. The composition of claim 1, wherein the nanoparticle further comprises a fluorescent label.

21. A process for forming a composition capable of binding to a biologically active microorganism comprising:

providing a hydrophobic monomer;

providing a hydrophilic linking agent;

binding the hydrophilic linking agent to the hydrophobic monomer so as to form a macromonomer comprising the hydrophobic monomer and the hydrophilic linking agent;

providing additional hydrophobic monomer;

polymerizing the additional hydrophobic monomer with the macromonomer to form a nanoparticle comprising a core of the polymerized hydrophobic monomer and the hydrophilic linking agent bound to the core; and

binding a biofunctional material to the hydrophilic linking agent, wherein the biofunctional material is functionally identical to a receptor recognized by an adhesin on the surface of the biologically active microorganism.

22. The process of claim 21, wherein the biofunctional material is bound to the hydrophilic linking agent after the polymerization of the additional hydrophobic monomer with the macromonomer.

23. The process of claim 21, wherein the biofunctional material is bound to the hydrophilic linking agent prior to the polymerization of the additional hydrophobic monomer with the macromonomer, the macromonomer further comprising the biofunctional material.

24. The process of claim 21, further comprising forming an aqueous suspension comprising the nanoparticle.

25. A process for agglomerating biologically active microorganisms comprising:

providing a composition comprising multiple nanoparticles, the nanoparticles comprising a hydrophobic polymeric core, multiple hydrophilic linking agents bound to the polymeric core, and a biofunctional material bound to the linking agents, wherein the biofunctional material bound to the linking agents comprises a binding site for an adhesin present on the surface of a biologically active microorganism; and

contacting the composition with the biologically active microorganisms, wherein upon contact, the nanoparticles bind with one or more microorganisms and the microorganisms bind to one or more nanoparticles such that an agglomerated complex of nanoparticles and microorganisms is formed.

26. The process of claim 25 wherein the biologically active microorganism is an enteropathogenic bacteria.

27. The process of claim 25, wherein the biologically active microorganism is an enteropathogenic eukaryote.

28. The process of claim 25, wherein the agglomerated complex of nanoparticles and microorganisms is formed within the digestive system of an animal.

29. The process of claim 25, wherein the biologically active microorganisms are contaminants that pose a danger to the general public.

30. A process for labeling microorganisms comprising:

providing a composition comprising a nanoparticle, said nanoparticle comprising a hydrophobic polymeric core, a hydrophilic linking agent bound to said polymeric core, a biofunctional material bound to said linking agent, and a label bound to the polymeric core, wherein said biofunctional material is functionally identical to a receptor for an adhesin present on the surface of a biologically active microorganism; and

contacting said biologically active microorganism with said nanoparticle, said biofunctional material binding with said microorganism at said adhesin.

31. The process of claim 30, wherein the label is a fluorescent label.

32. The process of claim 31, wherein the fluorescent label is a crosslinking agent within the polymeric core.

33. The process of claim 31, wherein the fluorescent label is bound to the surface of the polymeric core.

34. The process of claim 30, wherein the biologically active microorganism a pathogenic bacteria.

35. The process of claim 30, wherein the biologically active microorganism is a eucaryotic organism.

36. A process for removing a pathogenic microorganism from the digestive tract of an animal comprising:

introducing a composition to the digestive tract of an animal, the composition comprising a suspension of nanoparticles, the individual nanoparticles comprising a hydrophobic polymeric core, a hydrophilic linking agent bound to the polymeric core, and a biofunctional material bound to the linking agent, wherein the biofunctional material bound to the linking agent is functionally identical to a receptor for an adhesin present on the surface of the pathogenic microorganism;

forming agglomerated complexes comprising the nanoparticles and the pathogenic microorganisms within the digestive tract of the animal; and

removing the agglomerated complexes from the digestive tract of the animal.

37. The process of claim 36, wherein the animal is poultry.

38. The process of claim 37, wherein the animal is a chicken.

39. The process of claim 36, wherein the animal is a cow.

40. The process of claim 36, wherein the pathogenic microorganism is *C. jejuni.*

41. The process of claim 36, wherein the pathogenic microorganism is *E. coli.*

42. The process of claim 36, wherein the biofunctional material is a carbohydrate moiety.

43. The process of claim 42, wherein the carbohydrate moiety is D-mannose or mannan.

44. The process of claim 36, wherein the hydrophobic polymeric core is a polystyrene polymer and the linking agent is a polyethylene glycol polymer.

45. The process of claim 36, wherein the composition is introduced to the digestive tract of the animal before the animal is transported to a slaughterhouse.